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A REFRIGERATOR AND A METHOD FOR CONTROLLING VARIABLE COOLING CAPACITY THEREOF

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority on International Application No. PCT/EP2005/050590, filed February 10, 2005, which claims priority on European Application Nos. EP 04003144.5 filed February 12, 2004 and 04008721.5 filed April 13, 2004.

BRIEF SUMMARY OF THE INVENTION

[0002] The present invention relates to a refrigerator comprising a compressor having a fixed or variable cooling capacity and control means for controlling such compressor in response to the temperature inside the refrigerator, as well as to a method for automatically speeding up the cooling time of the food stored in a refrigerator without user interaction and with limited energy consumption. With the term "refrigerator" as used in the description and in the appended claims we mean any kind of domestic refrigerator and freezer. With the term compressor having variable cooling capacity we mean all kind of compressors having the possibility of changing the output, either by changing displacement of the compressor (for instance with the so called free piston compressor) or by changing the speed of the compressor (in case of fixed displacement) either continuously or stepwise. In general, modern freezers and refrigerators have a fast freezing or fast cooling feature. This feature must be activated by the user and consists in keeping the compressor running at its maximum cooling capacity for an appropriate fixed time (i.e. 24 hours). Such a known technique guarantees the maximum cooling speed and is suitable for the fast cooling of large amounts of food. When the amount of food is not very large, it leads to unnecessary food over-cooling and energy waste. On the other hand, the user often forgets to activate the function or he doesn't consider the amount of food large enough to manually activate the function. As a consequence in these cases, the cooling process is relatively slow.

[0003] A refrigerator having the features listed in the appended claims solves the above problem.

[0004] The present invention provides a control algorithm able to estimate the amount of warm food inserted into the refrigerator or freezer. On the basis of this estimation, the

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